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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|-------------|----------------------|---------------------|------------------|
| 09/678,609 | 10/04/2000 | HIROKAZU HONDA | PF-2683/NEC/US/mh | 7187 |
| 466 | 7590 | 07/12/2006 | EXAMINER | |
| YOUNG & THOMPSON 745 SOUTH 23RD STREET 2ND FLOOR ARLINGTON, VA 22202 | | | GRAYBILL, DAVID E | |
| | | | ART UNIT | PAPER NUMBER |
| | | | 2822 | |

DATE MAILED: 07/12/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/678,609

Applicant(s)

HONDA, HIROKAZU

Examiner

David E. Graybill

Art Unit

2822

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 April 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 43, 45-54 and 86-89 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 43 and 45-54 is/are allowed.
- 6) ☒ Claim(s) 86-88 is/are rejected.
- 7) ☒ Claim(s) 89 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____

The indicated allowability of claims 86-88 is withdrawn in view of the newly discovered reference(s) to Papageorge (5438224) and Kresge (6066808). Rejections based on the newly cited reference(s) follow.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

In the rejections infra, generally, reference labels are recited only for the first recitation of identical claim elements.

Claims 86 and 88 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tsukamoto (5841194), Papageorge (5438224) and Maeno (6222738).

At column 7, line 10 to column 8, line 19, Tsukamoto discloses a semiconductor device comprising: a multilayer interconnection board 108 having first and second surfaces, said first surface being opposite and spaced from said second surface; an external electrode pad 102 formed in a side of said second surface; a metallic post 204 protruding from said external electrode pad; a metallic frame 106 formed in said side of said second surface to surround said metallic post, a gap "recess" being thereby formed between said metallic post and said metallic frame; and a layer 205 filling said gap; wherein a height of said metallic post (e.g. the total height of the post) from said second surface is substantially equal to a height of said metallic frame (less than the total height of the frame) from said second surface.

However, Tsukamoto does not appear to explicitly disclose a semiconductor chip mounted in a side of said first surface.

Nonetheless, at column 5, line 54 to column 6, line 18; and column 7, lines 15-28, Papageorge discloses a semiconductor chip (lower chip illustrated in FIG. 6, not labeled) mounted in a side of a first surface. Moreover, it would have been obvious to combine this disclosure of

Papageorge with the disclosure of Tsukamoto because it would substantially enhance the use of real estate on the board.

Also, Tsukamoto does not appear to explicitly disclose a resin layer.

Still, at column 6, lines 45-51, Maeno discloses a resin layer 11. In addition, it would have been obvious to combine these disclosures of Maeno and Tsukamoto because it would facilitate provision of the layer 205 of Tsukamoto.

Claim 87 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tsukamoto, Papageorge and Maeno as applied to claim 86, and further in combination with Kresge (6066808).

The prior art applied to claim 86 does not appear to explicitly disclose wherein said external electrode pad has an exposed surface forming a substantially flat plane with said second surface.

Nevertheless, at column 8, line 63 to column 9, line 8, Kresge discloses wherein an external electrode pad has an exposed surface forming a substantially flat plane with a second surface. In addition, it would have been obvious to combine this disclosure of Kresge with the disclosure of the applied prior art because, as taught by Kresge, it "has advantages."

Claims 43 and 45-54 are allowed.

Claim 89 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Applicant's remarks filed 4-18-6 have been fully considered and are adequately addressed by the rejections supra.

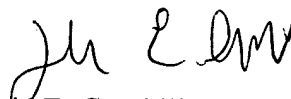
The art made of record and not applied to the rejection is considered pertinent to applicant's disclosure. It is cited primarily to show inventions relevant to the examination of the instant invention.

For information on the status of this application applicant should check PAIR:

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Alternatively, applicant may contact the File Information Unit at (703) 308-2733. Telephone status inquiries should not be directed to the examiner. See MPEP 1730VIC, MPEP 203.08 and MPEP 102.

Any other telephone inquiry concerning this communication or earlier communications from the examiner should be directed to David E. Graybill at (571) 272-1930. Regular office hours: Monday through Friday, 8:30 a.m. to 6:00 p.m.
The fax phone number for group 2800 is (571) 273-8300.



David E. Graybill
Primary Examiner
Art Unit 2822

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D.G.
6-Jul-06